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Sigurd Strangeland

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Agricultural Economics Pamphlet 40 September 1952

LABOR INPUTS FOR LIVESTOCK ENTERPRISES

Agricultural Economics Department
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State College Station, South Dakota

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LABOR INPUTS FOR LIVESTOCK ENTERPRISES

By Sigurd Stangeland 1/
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I. INTRODUCTION

For all kinds of farm planning input and output data relating to costs, yields and labor requirements are needed. Although labor is a major factor in the cost of producing livestock and livestock products little information is available on this input for South Dakota. Some estimates are available, but these estimates are average labor requirements which are based upon farm records obtained in the Corn Belt 2/. These data may be questioned with respect to representativeness for this state. Also the use of average requirements for all sizes of herds and degrees of mechanization leaves much to be desired for useful planning.

Studies on livestock labor requirements indicate a great difference between farmers in the amount of labor required per unit of livestock. They further indicate that most of this difference in labor requirement arises from variations in (1) size of herd, (2) degree of mechanization, and (3) work routine.

1/ Assistant Economist. Special Acknowledgements are due to the following veteran instructors for their cooperation in this study: Robert Gunderson, Arlington; Raymond Scott, Volga; Darrell Robbins, White; Orville Quail, Toronto; Maynard Cochrane, Clear Lake; Donald Woodford, Bonilla; Harold Campbell, Clark; Robert Roberts, Frankfurt; Lawrence Sayer and Gene Garry, Madison.
Cooperative Project of South Dakota Agricultural Experiment Station, Project No. 179-798 Supplement No. 5, and the Bureau of Reclamation, U. S. Department of the Interior. The author acknowledges valuable criticism from his colleagues in the Agricultural Economics Department and from Everett Jennewein and other staff members of the Bureau of Reclamation.

2/ See "Planning the Farm Business," Agricultural Economics Department, South Dakota State College, 1951, p. 22 and 37 for examples of such estimates.

Labor requirements per head decrease as the size of herd is increased. This is due, in part, to the greater use of labor saving devices on the larger enterprises. However, even when similar types of equipment are used with varying sizes of enterprises, labor is used more efficiently on the larger enterprises. This results since some tasks require about the same amount of time irrespective of the size of enterprise. For many other tasks more total labor is required for the larger enterprises, but the increase in the labor is not proportional to the increase in the size of herd or flock.

The labor requirement per head is also affected by the degree of mechanization. Self-feeders and waterers are important pieces of equipment which reduce the labor required for the poultry and hog enterprises. For the dairy enterprise milkers, feed carts, litter carriers and watering cups are a few examples of mechanical devices which reduce the labor load. These are some of the more important items of labor saving equipment which affect labor efficiency; numerous other pieces of equipment are also used for reducing the labor requirement.

Further increases in labor efficiency can be accomplished through planning the work program. Farm records indicate a great variation in labor requirements among farmers with enterprises of similar size and similar usage of equipment. This difference is mainly due to differences in the manner in which the job is organized on the individual farms. Studies on job organization indicate that more than a 30 per cent reduction in the labor requirement can be accomplished through improving the work routine3/.The reduction is made through changes in barn arrangement, position of equipment and supplies and path of travel.

3/ E. M. Carter, Labor Saving Through Farm Job Analysis, Vermont Agr. Expt. Sta. Bul. 503, August 1946, pg. 61-63.
J. W. Overhaltzer and L. S. Hardin , Simplifying the Work and Management of Hog Production, Purdue U. Exp. Sta. Bul. 506, 1947.

Since farm planning involves an examination of alternative methods of production or organizations, a range of input and output data have to be obtained; this is particularly necessary if the input-output relationship varies with the different methods of production or farm organization. The purpose of this paper is to present labor inputs for livestock enterprises which can be used in farm planning.

Data on labor requirements to be useful for farm planning should give the requirement for a specific set of conditions such as size of herd and degree of mechanization; particularly when these conditions vary with alternative farm plans. Since the "work simplification" aspect of labor efficiency is more closely related to the abilities of the individual farm operator rather than the general farm organization, this factor would not cause the labor requirement to vary with alternative farm plans. Therefore, for the purposes of budgeting average efficiency with respect to the "work routine" can be assumed but information should be available by size of herd and degree of mechanization.

Procedure

Labor inputs that are to be used in budgeting can be obtained through farm records. However, the farm record results on labor requirements need adjustments before they are used in farm budgeting. These adjustments are necessary since (1) inconsistent results are frequently obtained unless a large sample is used and (2) the association between size of enterprise and labor requirement over emphasize the savings which are due to larger scale because of the substitution of equipment for labor on the larger enterprises and because the operators with the larger enterprises are often more highly skilled.

Although survey data or records are sorted on the basis of size of enterprise and degree of mechanization, a considerable variation in labor requirement within each group exists. These variations are due mainly to differences among operator in their work routine, location of equipment and supplies, or other factors which can be accounted for only through a detailed case study. Unless a very large number of records are obtained, a few extremely efficient or inefficient operators in particular groups will cause this group to deviate unexpectantly from the trend. These deviations have to be adjusted before the data is suitable for farm budgeting or planning.

Data obtained from surveys and records indicate a considerable decline in labor requirements per production unit as the size of enterprise is increased. This decline is mainly a result of (1) certain "over-head" tasks which require a specific amount of time irrespective of the size of enterprise, (2) greater mechanization on the larger enterprises, and (3) more highly skilled operators on the larger enterprises.

Although many types of mechanization are economically feasible on only the larger enterprises, in farm planning these equipment costs have to be considered. It is, therefore, necessary to estimate the portion of labor which is attributable to substitution of equipment for labor. In unadjusted data the effect of these factors are not usually distinguishable.

Also, adjustments have to be made because the operators with the larger enterprises are likely to be more skilled. In farm planning the important information is the effect on labor requirement when a particular operator decreases or increases the size of enterprise rather than information on the average labor required by operators with small enterprises as compared to the labor required by operators with large enterprises.

For these reasons estimates will be more useful for farm planning than the unadjusted record data. The estimates will be based upon the record data from this survey for enterprises where these data were obtained. For enterprises where data were not obtained in this survey, studies conducted in other states will serve as a basis for making the estimates. The estimates will be derived principally by smoothing out the record data with adjustments to allow for the biases mentioned above. Detailed time and motion studies will also be used in making the adjustments.

How Data Were Obtained

The data used as a basis for making estimates on livestock labor requirements were obtained from a selected sample of farmers enrolled in the veterans' on-the-farm training program. No attempt was made to secure random sampling since it was considered impractical to obtain cooperation for record keeping from a random sample of farmers. In many studies of livestock labor requirements, the data were obtained either from records kept by a selected sample of farmers or from a survey of a random sample of farmers. Both methods introduce bias. The first is biased to an unknown extent and direction by the method of selection. The second generally involves memory bias because some tasks are often forgotten and are not included in the survey, while on other tasks the labor requirement has never been measured, and thus we will have unknown errors of reporting. Although the ideal means of obtaining the data would be from a random sample of farmers, it appears that very few studies on livestock labor requirements haveeobtained their data from records kept by this method.

It was felt that data obtained from records kept by a selected sample of veteran trainees would be preferable to data obtained from a survey of a rample sample of farmers, because of the possibility of obtaining more complete

records. Although a group of veteran trainees are probably not representative of farmers in a given area because of differences in degree of mechanization between beginning and established farmers, it was felt that this bias could be overcome to some extent by relating the labor requirement to the type of equipment used. Whether or not established farmers are more efficient than beginning farmers when both groups are using similar types of equipment is debatable.

At the beginning of the year 1951, instructors of veteran on-the-farm training classes were given a set of labor forms and instruction sheets. The instructors gave the instruction sheet to the trainee at the beginning of the year and at the beginning of each month he gave the trainee a labor form.

Under the supervision of the instructor, the trainee recorded the labor required on the monthly labor form which, in most cases, was turned in to the instructor at the end of each month. With the exception of a few cases, 12 monthly labor records were obtained from each trainee.

Each instructor was visited every three months to pick up the completed monthly forms and to discuss with the instructor the manner in which entries were to be made.

After the records had been kept for nine months, each cooperating trainee was interviewed by the author in order to edit his records and to obtain information on the equipment used on his enterprise. During this interview, information was also obtained on the average size of enterprise for the year.

A total of 135 usable records were obtained from the trainees. The number of records obtained from the various counties is as follows: Brookings 35; Deuel 25; Kingsbury 20; Clark 20; Davison 15; Beadle 11 and Spink 9.

II. LABOR REQUIREMENTS FOR THE DAIRY ENTERPRISE

Review of other studies. The labor requirements for the dairy enterprise are much higher than for other livestock. Moreover, the pattern of labor utilization is fairly uniform throughout the year. Slightly more labor is required during the winter than during the summer. One study shows that chores on a 15 to 20 cow herd took 50 hours per cow in the summer and 65 in the winter 4/.

Labor requirements in dairy production vary considerably with the number of cows in the herd. Studies conducted in other states indicate a definite association between the annual labor requirement per cow and size of herd (table 1).

Table 1. Size of Dairy Herd and Labor Requirements

Washington [a]		California [b]		Nevada [c]		Illinois [d]	
Size Herd	Man Labor per cow	Size Herd	Man Labor per cow	Size Herd	Man Labor per cow	Size Herd	Man Labor per cow
5-9	189	5-19	122	10	148	10	165
10-14	151	20-34	102	20	132	15	130
15-19	130	35-49	93	30	116	20	120
20-24	103	50-65	84	40	100	25	110
25-29	103						
30-39	99						
40-49	88						
50-74	65						

a Adapted from Washington Agr. Expt. Sta. Bul. 432, 1943 (p. 17)
b Adapted from California Agr. Expt. Sta. Bul. 640, 1940 (p. 56)
c Nevada Agr. Expt. Sta. Bul. 128, 1932 (p. 15)
d Adapted from Illinois Agr. Expt. Sta. A. E. 2871, 1952 (p. 30)

4/ Carl F. Reuss, et. al. Labor Requirements for Selected Farm Enterprises in Washington, Wash. Agr. Expt. Sta. Bul. 432, 1943, p. 4.

The studies do not indicate the extent of mechanization on these enterprises of varying sizes. Undoubtedly, part of the reason for lower labor requirements per cow for the larger herds is that more labor saving devices are used with the larger enterprises. One study indicates that most common labor saving devices are economically feasible once the level of about 25 cows are reached 5/. In a study in Wisconsin, the authors conclude that most labor saving equipment is profitable for herds as small as 10 cows, an exception being the mechanical barn cleaner 6/. Although most equipment for dairying is profitable for small herds, it appears that mechanization offers more opportunity for profit with larger enterprises. Therefore, a considerable part of the apparent savings in labor per cow for the larger enterprises may be a result of substituting machinery for labor.

On the other hand, there may be a difference between the operators with small enterprises and those with the large enterprises in the disposal of the product. Elwood, et al. in a study on labor requirements for dairying indicates that more labor is required when the product is sold as fluid milk because of added sanitation measures 7/. For those studies given in table 1, it is likely that a larger number of the operators with small enterprises sold their product as cream while a larger number of the operators with the larger enterprises sold their product as fluid milk. If this is true, the labor requirement for the small enterprises would be lower because this factor while those for the larger enterprises would be relatively higher because of the difference in marketing method; this would tend to offset some of the labor savings of the larger herds which is a result of substituting machinery for labor.

5/ Carl F. Reuss, et. al., op. cit., p. 4.
6/ Walter W. Wilcox and Emil Rauchenstein, "The Effect of Size of Herd on Milk Production Costs", Journal of Farm Economics, Vol. 30, No. 4, Nov. 1948, p. 719.
7/ Robert B. Elwood, et. al., Changes in Technology and Labor Requirements in Livestock Production: Dairying, W. P. A. Report No. A-14 BAE, USDA, and W.P.A. Cooperating, Washington, D. C. 1941, pp. 73-74.

Most of the labor used in milk production varies directly with the equipment used and with the number of cows in the herd. However, some operations which can be called "overhead" labor require a certain amount of time regardless of the size of herd. Such tasks as cleaning and assembling the milkers, going to and from the dairy barn, taking the cows to and from pasture in the summer and preparing to clean the barn in the winter are constant and do not vary with the size of herd. In the Wisconsin study these operations were estimated at 180 hours per herd per year 8/. This factor accounts for part of the labor efficiency associated with the larger herds.

Some studies on the labor requirement for the dairy enterprise show a direct relationship between man hours per cow and the rate of milk production. A study in New York state indicates that his relationship is quite significant (table 2) 9/.

Table 2. Effect of Amount Milk Production and Feed Fed on Labor Requirements [a]

CWT of Milk Produced Per Cow	Pounds of Grain Per Cow	Tons of Hay Per Cow	Tons of Silage Per Cow	Man Hours Labor Per Cow
Less than 65	1700	2.2	3.9	99
65 to 74	2044	2.1	3.3	107
75 to 84	2413	2.4	4.4	121
85 to 94	2837	2.6	4.5	131
95 to 104	3348	2.5	5.3	129
105 or more	4531	2.7	5.8	146

a Adapted from New York Agr. Expt. Sta., A. E. 705. (p. 4) 1949.

Similarly, estimates on the relationship of labor requirements and production are given for dairying in California in a study on costs of dairying (table 3)10/. However, other studies found this relationship to be insignificant. In a study on costs of producing milk in Northwestern Indiana, no

8/ Ibid, p. 718.
9/ A. J. Ashe, Input-Output Relationships in Milk Production From New York Cost Account Farms, New York Agr. Expt. Sta. A. E. 705, 1949, p. 4.
10/ Arthur Schultis, Dairy Management in California, California Agr. Expt. Sta. Bul. 640, 1940, p. 28.

significant correlation existed between labor input and milk production 11/. Elwood et. al. in a study of the dairy industry in the U. S. states that it requires only a little more labor to care for a high-producing cow than for a low-producing one 12/.

Table 3. Effect of Amount of Butterfat Produced and Feed Fed on Labor Requirements a/

Lbs. of Butterfat Per Cow	Lbs. of Concentrates Per Cow	Lbs. of Hay Per Cow	Lbs. of Silage Per Cow	An. Unit Months of Pasture	Hours of Labor
175	200	2400	0	11.7	70
200	500	2500	0	11.6	75
225	800	2650	600	11.3	80
250	1100	2900	1200	10.9	85
275	1400	3200	1800	10.5	90
300	1720	3500	2400	10.0	95
325	2050	3750	3000	9.6	100
350	2440	4000	3600	9.1	105
375	2900	4150	4200	8.6	110
400	3500	4200	4800	8.0	115

a/ Adapted from California Expt. Sta. Bul. 640 (p. 28).

It appears that an additional amount of labor would be required for the high producing cows because of heavier feeding and a greater amount of milk to handle. However, the significance of this additional labor appears to depend upon how the high production is achieved. If the higher production is a result of substituting grain, hay and silage for pasture, the additional labor which is associated with the high production per cow is undoubtedly significant. This seems to be the case for the data mentioned above for New York and California. Data on pasture are not given in the study of dairying in New York, but if the pasture months were equal for each level of production, one would expect a substitution of grain for forage as milk production

11/ E. C. Young, op. cit. p. 233.
12/ Robert B. Elwood, et. al., op. cit. pp. 73-74.

is increased instead of an increase in both grain and forage. On the other hand, if the higher production is achieved through feeding more grain and less forage or through substituting a herd of high producing capacity for one of low producing capacity, the additional labor for the higher production can perhaps be considered insignificant. Some additional labor would be required for handling the additinnal milk produced, but this additional labor would be small compared to the total labor requirement.

Results of survey. Most of the records obtained on the dairy enterprise were from small dairy or milking beef herds in which the product was sold as cream rather than fluid milk. Only three of the 32 operators who kept records had herds larger than 10 cows; only one operator sold the product as fluid milk. Nevertheless, such enterprises are important in this state (table 4). Over ninety per cent of the farms having milk cows marketed the product as cream.

Table 4. Distribution of Dairy Production in South Dakota - 1950

Farms having milk cows	50,820
Number of milk cows on farms	344,552
Average number of milk cows per farm	6.8
Number of farms selling product as whole milk	3,506
Number of farms selling product as cream	37,842
Per cent marketing their product as cream	91

Source: U. S. Census, Preliminary.

The enterprises for which records were kept appeared to be quite uniform in degree of mechanization. Except for milking machines, very little labor saving equipment was used. Only one operator had watering bowls and hot running water in the barn for cleaning utensils. None of the operators had barn cleaners, silage unloaders, feed cards, nor automatic feed grinding equipment.

Even within the small dairy enterprises, the amount of labor required annually per cow (including replacements) was considerably more for the smaller herd than for the larger herd (table 5). Because of the fewness of cases the trend in labor required per cow is not consistent, but it is apparent that considerably less labor is required per cow in the larger herds.

Table 5. Size of Dairy Herd and Annual Labor Requirement Per Milk Cow [a]

Number of Cows in Herd	Hand Milked		Machine Milked	
	Number of Cases	Hours Labor Required	Number of Cases	Hours Labor Required
3 to 5	9	169	1	137
6 to 8	8	145	3	125
9 and over	3	138	8	112
Total	20		12	

Source: Records kept by veteran trainees, east central South Dakota, 1951.
a Includes labor required for replacements.

The use of a milking machine saved approximately 25 hours per cow annually. This savings is similar to that found in other studies. One study indicates a 28 hour per cow per year savings, another, 21 hours 13/.

Although the enterprises studied were small and had very little labor saving equipment, the labor requirements per cow are not high when compared to those in other areas (see table 1). This low requirement is accounted for in part by the method in which the product is marketed. When the product is marketed as cream, generally less labor is required for marketing and less effort is spent on sanitation measures than for the production of fluid milk. Also many of the herds in this study were of the dual-purpose type; in this case many of the cows are not milked for as long a period as dairy cows.

13/ Robert B. Elwood, op. cit. p. 48, and Cruz Venstrom and F. B. Headley, Factors Affecting the Cost of Dairying in Western Nevada, Nevada Agr. Expt. Sta. Bul. 128, 1932, p. 16.

The greatest percentage of the time spent on a dairy enterprise is devoted to milking (table 6). The time requirement for milking is 46 per cent of the total labor when no milker is used, and 38 per cent when a

Table 6. Percentage Distribution of Labor by Tasks

	Feeding	Watering	Milking	Separating	Cleaning and Bedding	Other
Without Milker (20 cases)	17	6	46	16	8	7
With Milker (12 cases)	22	5	38	13	10	12

Source: Records kept by veteran trainees, east central South Dakota, 1951.

milker is used. Labor for feeding constitutes about 20 per cent of the total required.

The distribution of the labor spent on a dairy enterprise is rather uniform (table 7). A larger amount of labor is required during the winter months, but the variation by seasons is not great.

Table 7. Percentage Distribution of Labor by Months

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
11	10	11	10	8	7	7	7	6	6	8	9

Source: Records kept by veteran trainees, east central South Dakota, 1951.

Estimated labor requirements. As mentioned previously, record data need adjustments before they are useful for farm planning. In this section estimates on labor requirements will be given by size of herd, for different degrees of mechanization and for different methods of marketing (table 8).

14/ The bases for estimating the difference in labor requirement for different marketing methods is found in a publication by Robert B. Elwood, et. al., op. cit. pp. 73-74. For information on the savings in labor when a pen type barn or special equipment is used see C. R. Hoglund and K. T. Wright, Reducing Dairy Costs, Michigan Agr. Expt. Sta. Special Bul. 376, 1952, p. 26, and Walter W. Wilcox and Emil Rauchenstein, op. cit., p. 719.

These estimates are based on data obtained in this study and studies made in other states. These estimates include the labor used in caring for the cows, milking, all work in caring for the milk or cream, feeding the cows, cleaning stables, and all work expended directly in producing milk and cream.

Table 8. Estimated Effect of Dairy Herd Size on Annual Labor Requirement Per Milk Cow a/

Number of Cows in Herd	When Product is Marketed as Cream		When Product is Marketed as Fluid Milk	
	Without Milker	With Milker	With Milker Only	With Milker Plus Special Labor Saving Equipment b
Less than 5	165	---	---	---
5 - 9	145	125	140	---
10 - 14	135	115	130	105
15 - 19	---	108	124	93
20 - 29	---	104	121	85
30 - 39	---	---	118	80
40 - 50	---	---	---	76

a Includes labor required for replacements.
b For conditions of either a pen-type barn or a stanchion barn which has the equipment of watering bowls, mechanical barn cleaner, silage unloader and necessary feed and silage carts.

They also include the labor used in caring for replacements. Uniform care is assumed for different sizes of herds.

The record data and estimates are presented graphically in figure I.

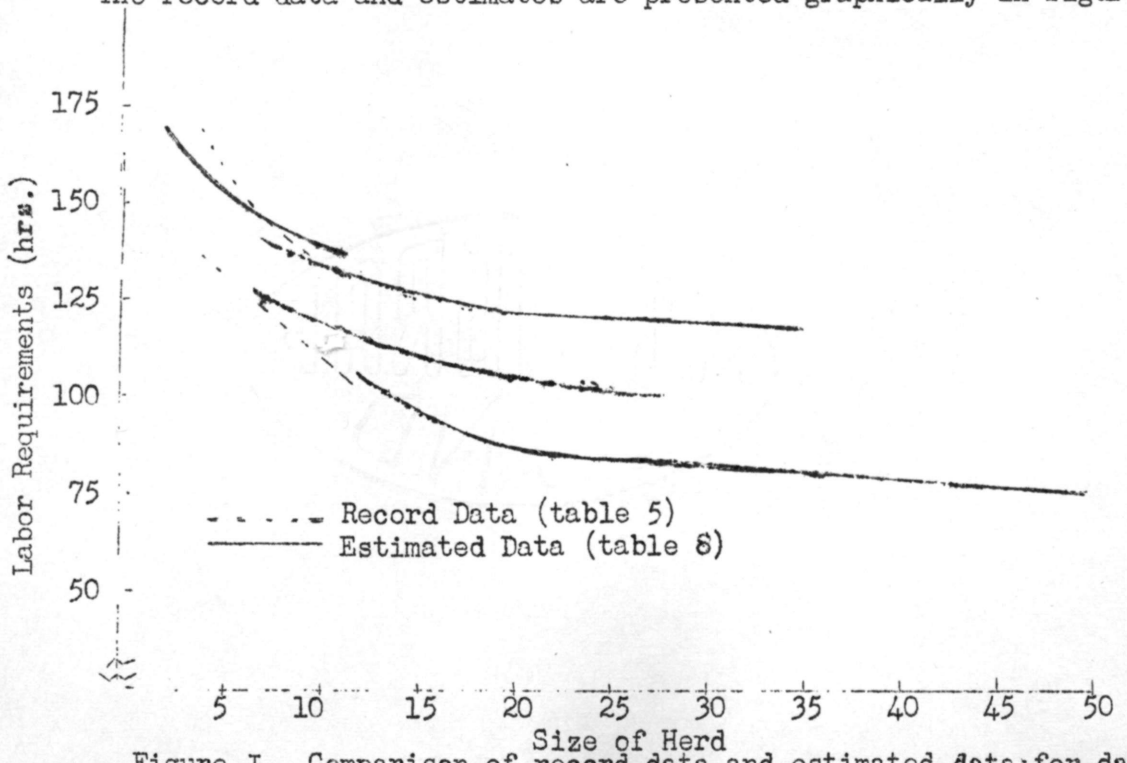

Figure I. Comparison of record data and estimated data for dairy herds.

III. LABOR REQUIREMENTS FOR BEEF ENTERPRISES

Beef Breeding Herds

Review of other studies. Labor costs for the beef breeding herd are a relatively small part of the total production costs. A recent study on costs and returns of beef breeding herds in southeastern Indiana indicates that labor costs account for approximately 10 per cent of the total costs. 15/ This study further indicates that roughly 80 per cent of these labor inputs are required during the winter season.

Other studies show a significant association between size of herd and the annual labor requirement. Findings from studies in Kansas and Washington on this association are remarkably similar (table 9). 16/ Information was not given on the degree of mechanization associated with the various sizes of herds. According to the data presented, the labor requirement per cow for a 50 cow herd is approximately one-third of that for a herd of less than 10 cows.

Table 9. Annual Amount of Labor Requirement Per Beef Cow by Size of Herd

Kansas [a]		Washington [b]	
Cows in Herd	Labor Requirement	Cows in Herd	Labor Requirement
(no.)	(hrs.)	(no.)	(hrs.)
1 - 10	59	Less than 10	47
11 - 20	32	10 - 19	27
21 - 30	31	20 - 29	28
31 - 50	20	30 - 39	21
51 - 100	14	40 - 59	18
101 or more	10	60 - 79	21
		80 - 99	13

a Adapted from Kansas Agr. Expt. Sta. A. E. Report No. 10 (1941)
b Adapted from Washington Agr. Expt. Sta. Bul. 432 (1943)

15/ Carl F. Reuss, et. al. op. cit. p. 18, R. J. Doll, et. al., Methods and Practices Used in Producing Beef Cattle in Chase and Lyon Counties, Kansas Agr. Expt. Sta. A. E. Report No. 10, 1941, p. 11.

16/ Elmer C. Dennis and Ronald H. Bauman, Livestock Costs and Returns in Southeastern Indiana, Purdue University Agr. Expt. Sta. Bul. 550, 1950, pp. 6 and 20.

Results of survey. All of the operators who kept records on the beef enterprise had general livestock farms rather than specialized beef farms. Only one operator, who had 55 cows, had a herd larger than 50 head. More than three-fourths of the operators had an enterprise of less than 30 head.

Very few labor saving devices were used on the beef enterprise by cooperators in this study. During the winter months the animals were usually fed outdoors in feed lots. The hay was usually hauled in November and stored near the feed lot.

Sixteen trainees kept labor records on the beef breeding herd. Although the number of records obtained on this enterprise is small, the association between size of herd and labor requirement is similar to those found in studies presented previously (table 10). Herds which averaged 11 cows per herd required 33 hours annually per cow whereas herds with an average of 53 cows required only 17 hours.

Table 10. Annual Labor Requirement per Beef Cow by Size of Herd [a]

Number of Cows in Herd	Average Size of Herd	Number of Cases	Labor Requirement
(no.)	(cows)	(no.)	(hours)
15 or less	11	7	33
16 - 30	24	6	22
31 and over	53	3	17

Source: Records kept by veteran trainees, east central South Dakota, 1951.
a Includes labor required for calves and replacements.

The task which takes the most time in beef enterprises is feeding (table 11). Roughly, 50 per cent of the total labor is spent on feeding. The tasks of feeding, watering and hauling hay constitutes 85 per cent of the total labor required on the beef enterprise.

Table 11. Percentage Distribution of Labor by Tasks

Feeding	Watering	Hauling Hay	Cleaning and Bedding	Fencing	Other
49	22	14	7	4	4

Source: Records kept by veteran trainees, east central South Dakota, 1951.

Beef cattle require little labor during the summer months. Approximately 85 per cent of the labor expended on a beef breeding herd occur during November through April (table 12). The records indicate that most of the labor expended during the month of November was for hauling hay.

Table 12. Percentage Distribution of Labor by Months.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
16	14	14	14	5	2	1	2	3	4	10	15

Source: Records kept by veteran trainees, east central South Dakota, 1951.

Estimated labor requirement. The estimates on labor requirements for beef cows include the labor for such tasks as feeding, watering, cleaning and bedding, fencing, checking herd while on pasture and other tasks directly connected with care of beef cows (table 13). The estimates also include labor required in the care of calves and replacements.

Table 13. Estimated Annual Labor Requirement per Beef Cow by Size of Herd

Cows in Herd	Labor Requirement
(no.)	(hrs.)
Less than 10	42
10 to 19	29
20 to 29	22
30 to 39	19
40 to 49	18
50 to 59	17
60 to 69	16
70 to 79	15
80 to 89	14
90 to 100	13

The estimates are for situations where the beef enterprise is a part of a general livestock farm rather than a specialized beef farm.

The record data and the estimated data on labor requirements for beef cows are presented graphically in figure II.

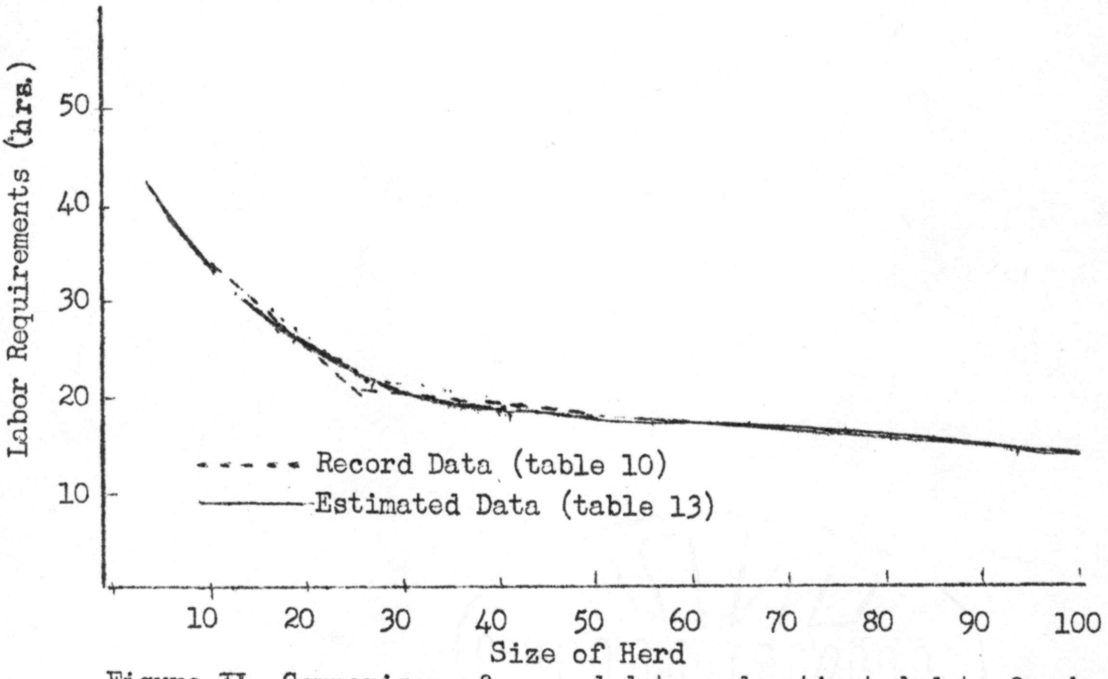

Figure II. Comparison of record data and estimated data for beef cows.

Beef Fattening Enterprise

Review of other studies. The beef fattening enterprise is similar to the beef breeding herd when labor costs are compared to the total production costs. The study on costs and returns on beef feeding enterprises in southeastern Indiana shows labor costs to be only 7 per cent of the total costs 17/.

Like other livestock enterprises, the labor requirement per unit of beef production varies considerably with the number of cattle being fed. Few studies have been made on this association, but studies in Kansas and Washington are quite similar in labor requirement per head per month (table 14). No information is given in the Washington report on the type of

17/ Elmer C. Dennis and Ronald H. Bauman, op. cit. p. 21.

feeding system from which these records were obtained; in the Kansas study the system employed was full feeding in dry lot.

Table 14. Labor Requirement for Beef Fattening by Size of Herd

Washington [a]		Kansas [b]	
Number of Cattle in Feed Lot	Man Hours Per Month	Number of Cattle in Feed Lot	Man Hours Per Month
(no.)	(hrs.)	(no.)	(hrs.)
Less than 5	6.2	1 - 10	5.4
5 - 9	5.7	11 - 20	3.1
10 - 19	3.2	21 - 30	3.0
20 - 29	1.8	31 - 50	1.5
30 - 59	2.0	51 - 100	1.4
60 - 99	1.7	101 or more	1.0

a Adapted from Washington Agr. Expt. Sta. Bul. 432 (1943).
b Adapted from Kansas Agr. Expt. Sta. Agr. Econ. Report No. 10 (1941).

Moreover information is not given on the degree of mechanization on the different sizes of enterprises. However, it is probably safe to assume that none of these small feeding operations of less than 100 head employed much of the special equipment which is now commonly found on large specialized feeding farms. Labor saving equipment, such as over-head feed bins, silage carts, etc., which are now found on farms where several thousand head of cattle are fed are probably not profitable for the small enterprises of less than 100 head.

The type of feeding system followed should affect the amount of labor required per animal. It would appear that systems such as feeding on grass or deferred feeding should require more labor than those on continuous full feeding in dry lot. The one study available shows the difference in labor requirements for the various feeding systems to be insignificant 18/ However, the farmers cooperating who fed cattle on pasture did not feed a heavy concentrate ration. This would tend to lower the labor required for this system, and thus make it comparable to the deferred and full feeding system in labor requirement.

18/ R. J. Doll, et. al. op. cit. p. 10.

In 1951 attempts were made to obtain information on labor for feeding operations in southeastern South Dakota. However, because of price uncertainty during this period, the cooperating farmers sold their cattle after feeding for a very short period. Other farmers who had agreed to cooperate by keeping labor records did not buy the cattle as planned because of the price uncertainty. Therefore no records were obtained on this enterprise for this study.

Estimated labor requirements. The estimates for the beef fattening enterprise are based entirely on studies conducted in other states (table 15). The representativeness of these data for South Dakota may be questioned, but it is not expected that the labor requirement for this enterprise would vary greatly for different areas. These estimates are given for conditions where the enterprise is a part of a general livestock farm rather than a specialized beef feeding farm. It is further assumed that little specialized feeding equipment such as those found on the large specialized farms will be used with the enterprise.

Information is not available to provide a basis for estimating the labor requirement for different feeding systems. Therefore, the estimates presented will constitute an "average" requirement for the more common feeding systems.

Table 15. Estimated Monthly Labor Requirement Per Animal for Beef Fattening Enterprise by Size of Herd

No. of Cattle in Feed Lot	Labor Requirement
(no.)	(hrs.)
Less than 10	6.0
10 to 19	4.0
20 to 29	3.0
30 to 39	2.4
40 to 49	2.0
50 to 59	1.8
60 to 69	1.6
70 to 79	1.5
80 to 89	1.4
90 to 100	1.3

The data from the Washington and Kansas studies and the estimated data are presented graphically in figure III.

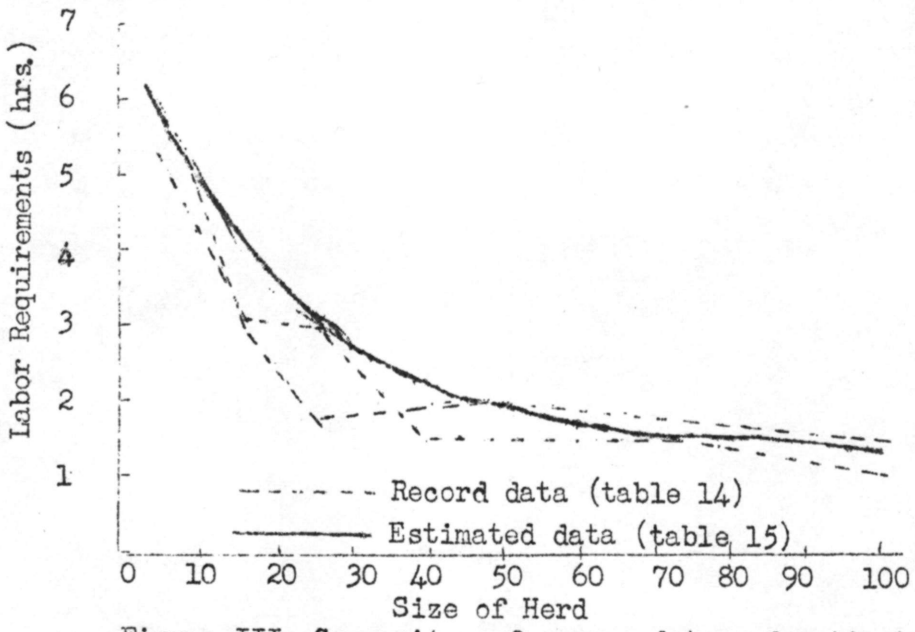

Figure III. Comparison of survey data and estimated data for beef fattening enterprise.

IV. LABOR REQUIREMENTS FOR THE SHEEP ENTERPRISES

Farm Flock

Review of other studies. Little information is available on labor requirements for a farm flock of sheep. Since this enterprise is usually a complimentary enterprise to utilize forage which would in many cases be wasted, labor is not usually the deciding factor on whether or not the enterprise should be added to the farm business. This would account, in part, for the lack of interest, and hence, lack of information on the labor requirements for this enterprise. Furthermore, most of the labor used on this enterprise occurs during the slack season. This again lessens the importance of the labor aspect on this enterprise.

Cooper and others in a study on labor requirements for crops and livestock estimated the average annual labor requirement per ewe to be 7 hours 19/. Farm record studies indicate that the average annual labor requirement per head is approximately 6 hours. The findings from a study in Kentucky shows that more labor is required per ewe for the smaller flocks than the larger flocks (table 16) 20/.

Table 16. Labor Requirement Per Ewe by Size of Flock [a]

Number of Ewes in Flock	Average Number of Ewes	Number of Cases	Annual Labor Requirement
(no.)	(no.)	(no.)	(hrs.)
Less than 50	35	14	5.9
55 to 99	70	23	4.1
100 and over	150	20	3.7

a Adapted from Kentucky Agr. Expt. Sta. Bul. 383, (1938) pp. 186-187.

Results from survey. Most of the records obtained on sheep enterprises were for small farm flocks. Only 4 out of the 15 operators who kept records on sheep had flocks of more than 50 ewes. One-third of the operators had

19/ M. R. Cooper, et. al., Labor Requirements for Crops and Livestock, U.S.D.A., B.A.E., FM 40, 1943, p. 137.

20/ W. L. Rause and Geo. B. Byers, Production Requirements for Crops and Livestock in the Bluegrass Region of Kentucky, Kentucky Agr. Expt. Sta. Bul. 383, 1938, pp. 186-187.

flocks of less than 25 ewes. No special labor saving equipment was used on this enterprise. In most cases the sheep were fed and watered along with the cattle.

Flocks which average 20 ewes required 6 hours of labor per head annually compared to 3 hours per head for flocks averaging 80 ewes (table 17). The greatest difference in labor required per head occurred between enterprises less than 25 ewes and those of 25 to 49 ewes; this difference is 1.7 hours per head annually.

Table 17. Annual Labor Requirement Per Ewe by Size of Flock [a]

Number of Ewes in Flock	Average Number of Ewes	Number of Cases	Labor Requirement
(no.)	(no.)	(no.)	(hrs.)
Less than 25	20	5	6.2
25 to 49	36	6	4.5
50 to 120	80	4	3.2

Source: Records kept by veteran trainees, east central South Dakota, 1951.
a Includes labor required for lambs and replacements.

Feeding takes the most labor on a sheep enterprise. Over 50 per cent of the total labor is spent on feeding (table 18).

Table 18. Percentage Distribution of Labor by Tasks

Feeding	Watering	Hay Hauling	Fencing	Other [a]
56	25	2	2	15

Source: Records kept by the veteran trainees, east central South Dakota, 1951.
a Other includes such items as helping with the shearing task, fencing, repairing pens, lambing, etc.

The distribution of the labor throughout the year is similar to the beef enterprise. Three-fourths of the total labor is required during the months November through April (table 19).

Table 19. Percentage Distribution of Labor by Months

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
13	12	15	13	6	3	2	4	4	7	9	12

Source: Records kept by veteran trainees, east central South Dakota, 1951.

Estimated labor requirement. The estimated labor requirements per ewe include the tasks of watering, feeding, lambing, fencing and all other tasks directly associated with the care of the ewe (table 20).

Table 20. Estimated Annual Labor Requirement Per Ewe, by Size of Flock

Number of Ewes in Flock	Labor Requirement
(no.)	(hrs.)
Less than 25	6.0
25 to 49	4.5
50 to 74	3.5
75 to 100	3.0

The record data and estimated data on labor requirement per ewe are presented graphically in figure IV.

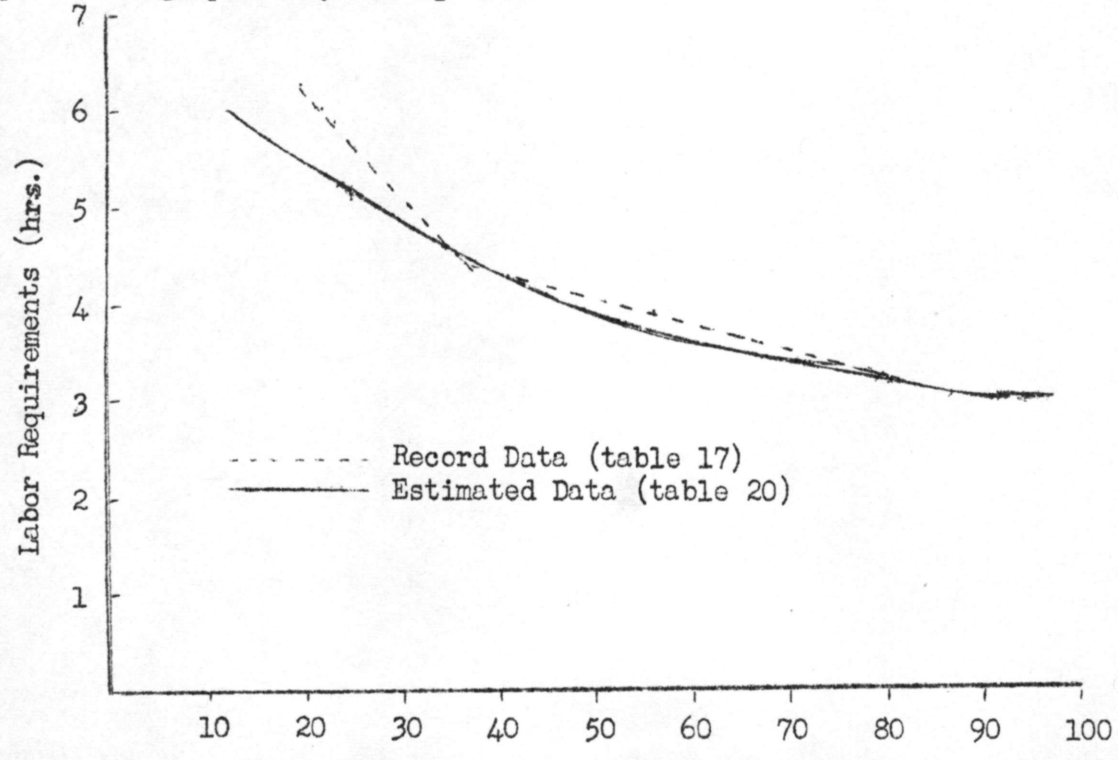

Figure IV. Comparison of record data and estimated data for a farm flock of sheep.

Lamb Fattening Enterprise

Review of other studies. Little information is available on the labor requirements for this particular enterprise. Data gathered on lamb feeding in Colorado indicates that the labor requirement for 10 lambs was equal to the labor requirement for one steer 21/.

In these findings information is given on the association of size of flock and labor requirements (table 21). These data do not indicate any

Table 21. Relation of Number of Lambs Fed to Man Hours [a]

Number of Lambs Fed	Number of Cases	Hours Per Day Per 1000 Head
300 - 700	7	7.42
701 - 1000	12	6.62
1001 - 1500	19	8.14
1501 - 1900	11	7.17
1901 - 2300	10	6.13
2301 - 2800	6	6.14
2801 Plus	3	4.99

a Adapted from Colorado Agr. Expt. Sta. Bul. 394.

pronounced tendency for labor requirements to vary with size of enterprise. However, in this area during this particular period the lambs were hand fed, and were separated into pens of a few hundred lambs each. It is probable that increasing the number of pens would not greatly reduce the work required per head. An additional man is needed to handle flocks of 1000 to 2000 head; this partly explains the higher labor requirements for these particular groups.

No information was obtained on this enterprise because none of the cooperators agreed to keep records on this particular operation. However, lamb fattening is an important enterprise in irrigated areas. If irrigation replaces the present dry-land farming in parts of this area, this enterprise

21/ R. T. Burdick and H. B. Pingry, Profits from Feeding in Northern Colorado, Colorado Agr. Expt. Sta. Bul. 394, 1932, pp. 40-43.

may become an important part of many farm organizations.

Estimated labor requirement. The estimates for this enterprise are based upon the data obtained in the Colorado study. The estimates are for conditions where this enterprise is a part of a general livestock farm rather than a specialized lamb fattening farm (table 22). The labor requirement for the large specialized lamb feeding operations which are highly mechanized would undoubtedly be much lower than the requirements presented in this paper. The estimates are for conditions where labor saving equipment are used to a very limited extent. The estimated labor requirement include all labor directly associated with feeding and caring for the lambs.

Table 22. Estimated Monthly Labor Requirement Per 100 Lambs in Feed Lot by Size of Lot

Number of Lambs Fed	Labor Requirement
(no.)	(hrs.)
Less than 100	45
100 to 199	38
200 to 299	32
300 to 399	28
400 to 599	24
600 to 1000	20

The information shown in the Colorado study and the estimated data on labor required for the lamb fattening enterprises are presented graphically in figure V.

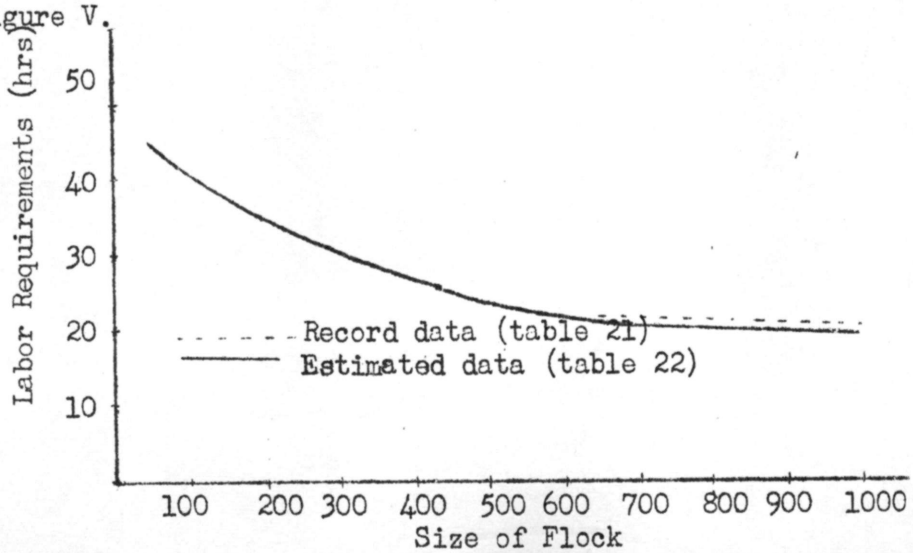

Figure V. Comparison of record data and estimated data for lamb fattening enterprises.

V. LABOR REQUIREMENT FOR HOG ENTERPRISES

Review of other studies. The labor requirement for the hog enterprise accounts for only about 10 per cent of the total production costs. However, since the labor for this enterprise is quite heavy during the summer months and competes with the crop enterprises, the labor requirement is of considerable importance.

Previous studies on the labor input for hogs indicate a definite association between size of herd and the labor requirement per litter. The findings from a study in Iowa shows that farms with 11 to 20 sows use only about three-fourths as much labor per sow as those with 10 sows or less. Those with 21 to 30 sows used about two-thirds as much labor per sow as those with 11 to 20 sows 22/. Data obtained in Illinois also shows that the labor required per 1000 pounds of pork produced is less for the larger herd (table 23) 23/.

Table 23. Relation of Labor Required to Pork Produced in Northwestern Illinois [a]

Total Pounds of Pork Produced	Labor Per 1000 of Pork
(lbs.)	(hrs.)
15,000	34
30,000	24
45,000	20

a Adapted from Illinois Agr. Expt. Sta. A. E. 2871, 1952.

In a specific study of the relationship between size of enterprise and costs, Scoville concludes that the usual survey data do not show a valid comparison of efficiency in use of labor on enterprises of different sizes since the degree of mechanization and the skill of the operator varies with

22/ John H. Hopkins, An Economic Study of the Hog Enterprise, Iowa Agr. Expt. Sta. Bul. 294, 1932, p. 187.

23/ R. H. Wilcox and R. A. Hinton, Detailed Cost Report for Northwestern Illinois, Ill. Agr. Expt. Sta. A. E. 871, 1952.

the size of enterprise. 24/. To overcome this weakness of survey data, he suggests synthesizing labor inputs for different sizes of enterprise from data obtained in detailed time and motion studies. When using this method, only those tasks which are constant regardless of size of herd account for the decrease in labor required per sow as the size of herd is increased. Such tasks include time spent in travel, in starting tractors, in opening gates, and hauling loads of feed and water. Operations that primarily involved work with the hogs such as care during farrowing, casterating, etc., were considered to require a constant amount of time per hog. Labor inputs which are obtained in this manner do not show as wide a variation in requirements for herds of different sizes as do the inputs obtained from survey data (table 24) 25/. When labor inputs are developed from a time and motion study the degree of

Table 24. Estimated Annual Amount of Labor Used in Hog Production, by Number of Sows a/

Size of Enterprise Number of Sows	Hours Per Breeding Unit Per Year	Size of Enterprise Number of Sows	Hours Per Breeding Unit Per Year
5	39	14	22
6	36	15	22
7	33	20	20
8	30	25	19
9	28	30	18
10	26	35	18
11	25	40	17
12	24	45	17
13	23	50	17

a Developed from "Time-Study Data" which have been adjusted upward by 25 per cent to allow for farm conditions - U.S.D.A. Tech. Bul. 1037, 1951, p. 69.

24/ Orlin J. Scoville, "Synthesis of Labor Inputs for Hogs from Time-Study Data", Journal of Farm Economics, Vol. 31, No. 3, August 1949, pp. 549-555.

25/ Orlin J. Scoville, Relationships Between Size of Farm and Utilization of Machinery, Equipment and Labor on Nebraska Corn-Livestock Farms, U.S.D.A. Tech. Bul. 1037, 1951, p. 69.

mechanization and skill of the operator can be held constant for the enterprises of different sizes; these factors are usually not accounted for in survey data.

Result of survey. Most of the records obtained on hog enterprises were for herds of 5 to 12 litters. Only 4 of the 50 trainees who kept records on hogs had over 12 litters. One litter system was used by 75 per cent of the operators. For those who used a two litter system, the number of fall litters was usually less than five. Nearly half of the spring pigs were farrowed in April. The remainder of the farrowing occurred during March, May and June.

Self-feeders and automatic watering systems were the principal labor saving devices used on this enterprise. Very little special equipment was used in addition to these two devices. All of the operators had central housing facilities, but cleaning was not done mechanically. The methods of handling and storing feed appeared quite uniform for all operators. Seventy-five per cent of the operators fed their hogs on pastures; there was no apparent difference in labor requirement when the pasture feeding was compared to dry lot feeding.

When the records are sorted by type of watering systems, it appears that automatic waterers saved 10 hours annually per litter (table 25) 26/. This savings varies for the different size of herd groupings. For example, for the 9 to 10 litter herd, 35 hours are required annually where an automatic waterer is not used compared to 26 hours when such a system is used - a savings of 9 hours for this particular size group.

26/ When the records are grouped in this manner, the distribution of those having self-feeders and those not having self-feeders is quite even for the two groups. Eight of the 18 operators who did not have automatic watering had self-feeders while 18 of the 32 who had automatic watering had self-feeders.

Table 25. Annual Labor Requirement Per Litter of Hogs for Different Methods of Watering

Number of Litters	No Automatic Watering System		Automatic Watering [a]	
	Number of Cases	Hours Labor Required	Number of Cases	Hours Labor Required
3 - 4	2	69	1	57
5 - 6	7	49	5	42
7 - 8	3	37	7	33
9 - 10	4	35	8	26
11 - 22	2	37	11	24
Total	18		32	

Source: Records kept by veteran trainees, east central South Dakota, 1951.

a The methods of automatic watering varied. Any system which did not involve carrying the water is referred to as an automatic watering system.

When the records are sorted by type of feeding system it appears that about 5 hours are saved annually per litter through the use of self-feeders (table 26) 27/. Again, the savings in labor varies for the different sizes of herds. For the 9 to 10 litter herd, 34 hours are required annually without the use of a self-feeder compared to 29 hours when this equipment is used.

Table 26. Annual Requirement per Litter of Hogs for Different Methods of Feeding

Number of Litters	No Self-Feeders		Self Feeders	
	Number of Cases	Hours Labor Requirement	Number of Cases	Hours Labor Requirement
3 - 4	2	69	1	57
5 - 6	6	48	6	45
7 - 8	6	32	4	36
9 - 10	5	34	7	29
11 - 22	5	31	8	24
Total	24		26	

Source: Records kept by the veteran trainees, east central South Dakota, 1951.

27/ When the records are grouped in this manner, the distribution of those having automatic watering and those not having automatic watering is again quite even for the two groups. Fourteen of the 24 who did not have self-feeders had automatic watering while 18 of the 26 who had self-feeders had automatic watering.

The lower labor requirement per litter for the larger herds is apparent (tables 25 and 26). This trend is not entirely consistent throughout because of a small number of cases in some of the groups.

Nearly half of the labor requirement for hogs is spent on feeding (table 27). Both the feeding and watering tasks combined account for 75 per cent of the total labor. Since these two tasks are of such importance, adoption of self-feeders and automatic waterers should lower total labor requirements markedly.

Table 27. Percentage Distribution of Labor on Hogs by Tasks

Feeding	Watering	Cleaning and Bedding	Grinding Feed	Other	Total
47	28	10	6	9	100

Source: Records kept by the veteran trainees, east central South Dakota, 1951.

Labor requirements for the hog enterprise are uniform throughout the year. Slightly more labor is required during the farrowing months in the spring (table 28).

Table 28. Percentage Distribution of Labor on Hogs by Months

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
8	7	9	11	9	8	8	8	8	8	8	8

Source: Records kept by the veteran trainees, east central South Dakota, 1951.

Estimated labor requirement. The estimated labor requirements for the hog enterprises include such tasks as feeding, watering, cleaning, and bedding, feed grinding, farrowing and all other tasks directly associated with the care of hogs (table 29). The estimated requirements are presented for two sets of conditions which are (1) no self-feeders nor automatic waterers and (2) use of both self-feeders and automatic waterers.

Table 29. Estimated Annual Labor Requirements Per Litter of Hogs for Different Methods of Feeding and Watering

Number of Litters	No self-feeder nor automatic waterer	Using self-feeder and automatic waterer
(no.)	(hrs.)	(hrs.)
Less than 5	60	45
5 to 9	46	32
10 to 14	38	25
15 to 19	36	21
20 to 30	35	20

The record data and the estimated data on the labor requirement per litter of hogs are presented graphically in figure VI.

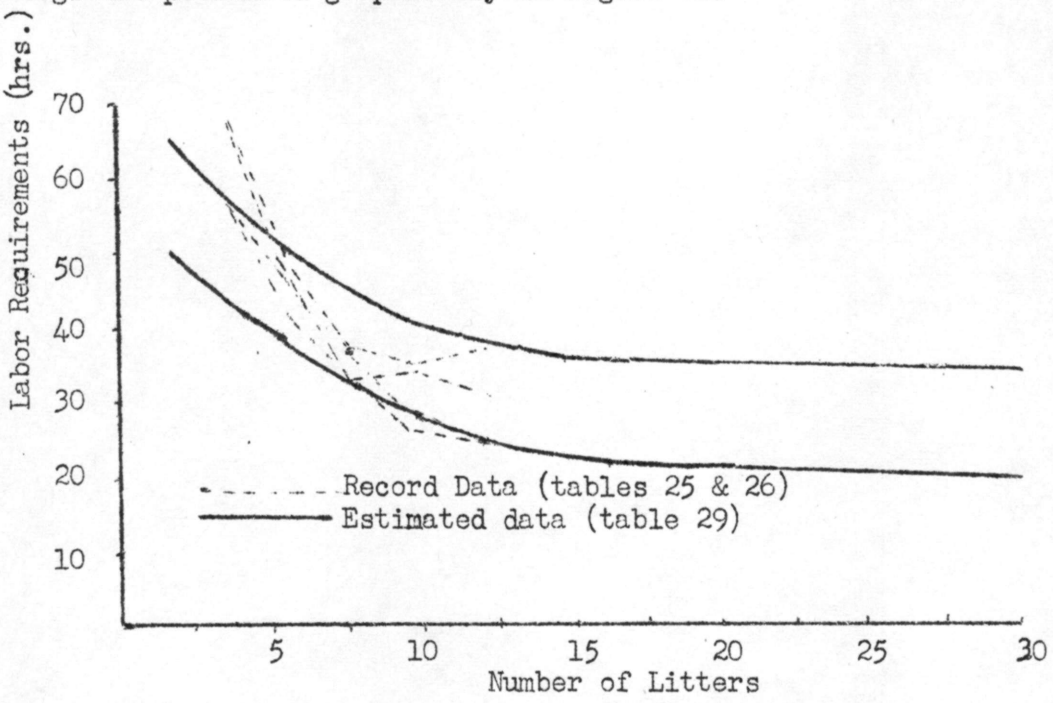

Figure VI. Comparison of record data and estimated data for the hog enterprises.

VI. LABOR REQUIREMENTS FOR THE POULTRY ENTERPRISE

Review of other studies. Labor is an important cost in egg production. A cost study in Indiana shows labor costs to be 20 per cent of the total production costs. Moreover, the labor required for the poultry enterprise is quite evenly distributed throughout the year, and therefore competes with labor requirements for crops.

Findings from studies on the relation of labor required to size of flock are not in agreement (table 30). In a Washington study, a sharp decline was found in man hours per 100 birds for flocks up to 150 hens; a very small savings in labor required per 100 hens occurred when flocks were increased from 150 to 1000 birds. In the Illinois study, a constant decline was found as flocks were increased from a flock of less than 50 to a flock of 300 birds. In the Oregon study, it was found that considerably more labor was required for flocks of less than 300 birds than with flocks with 300 to 600 birds. Flocks of more than 600 birds resulted in only slight decreases in the amount of labor required. One reason for these differences is the

Table 30. Relation of Labor Required to Size of Flock

Washington [a]		Illinois [b]		Oregon [c]	
Size of Flock	Labor Required Per 100 Hens	Size of Flock	Labor Required Per 100 Hens	Size of Flock	Labor Required Per 100 Hens
Less than 20	1118	Less than 50	350	Less than 300	480
20 - 39	754	50 - 90	320	300 - 600	360
40 - 59	686	100 - 149	290	600 - 900	310
60 - 79	400	150 - 199	260	900 - 1200	280
80 - 99	410	200 - 249	230	1200 and over	270
100 - 129	395	250 - 299	200		
130 - 159	296				
160 - 219	291				
220 - 499	286				
500 - 999	265				
1000 - 1999	187				

a Adapted from Washington Agricultural Experiment Station Bulletin 432 (1943)
b Adapted from Illinois Agricultural Experiment Station A.E. 2871 (1950)
c Oregon Agricultural Experiment Station Bulletin 287 (1931).

type of flocks included in the study. In the Washington study, both small farm flocks and large commercial flocks were included. Only small farm flocks were studied in the Illinois study, and in the Oregon study only commercial egg-producing flocks, where the farmer made a business of egg production, were included in the study. It is conceivable that the relative importance of the poultry in the farm organization would influence the labor requirement. For example, a flock would have a greater labor requirement where this enterprise is a major source of income; the difference being result of the more intensive care on farms where the flock is of considerable importance.

No mention is made in the above studies on the degree of mechanization on the various sizes of enterprises. It can be assumed, however, that a considerable portion of the savings in labor for the larger flocks is due to a greater use of equipment.

Results of survey. The records obtained on the poultry enterprise were for farm flocks which were not the major enterprise in the farm organization. No records were obtained on specialized poultry farms. The average size of flock was approximately 200 birds.

Only one operator had a self-watering system. The remainder carried the water. All feed was carried, none being stored in the laying house. Six of the twenty-two operators used the deep litter system.

Because of the few cases and a narrow range in size of flock, the records obtained on poultry were sorted into two groups. The smaller flocks require roughly 70 hours more per 100 hens annually than the larger flocks (table 31).

Table 31. Annual Labor Requirement per 100 Hens by Size of Flock [a]

Number of Hens in Flock	Average Number of Hens Per Flock	Number of Cases	Labor Requirement
Less than 200	124	11	273
200 to 600	309	11	204

Source: Records kept by veteran trainees, east central South Dakota, 1951.
a Includes labor for replacements.

Feeding, watering, collecting eggs, and preparing eggs for sale are the most important labor tasks for a farm flock of poultry. These tasks account for 90 per cent of the total labor requirement (table 32).

Table 32. Percentage Distribution of Labor by Tasks

Feeding	Watering	Collecting Eggs	Preparing Eggs for Sale	Cleaning	Other
31	18	15	25	5	6

Source: Records kept by veteran trainees, east central South Dakota, 1951.

Like the dairy and hog enterprise, the labor spent on the poultry enterprise is distributed uniformly throughout the year (table 33).

Table 33. Percentage Distribution of Labor by Months

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
9	8	9	9	9	8	8	8	7	8	8	9

Source: Records kept by veteran trainees, east central South Dakota, 1951.

Estimated labor requirements. The estimated labor requirements for poultry include such tasks as feeding, watering, collecting eggs, preparing eggs for sale, cleaning and bedding and other labor associated with the care of poultry enterprise (table 34). They also include the labor required in raising replacements.

Table 34. Estimated Annual Labor Requirement Per 100 Hens by Size of Flock

Number of Hens in Flock	Labor Requirement
Less than 100	300
100 to 199	260
200 to 299	225
300 to 500	200

These estimated requirements are for poultry flocks which are minor in terms of total net income rather than for flocks that are a major source of income. It is conceivable that more labor is used where the poultry enterprise is a major enterprise because of more intensive care.

The record data and the estimated data for a farm flock of poultry are presented graphically in figure VII.

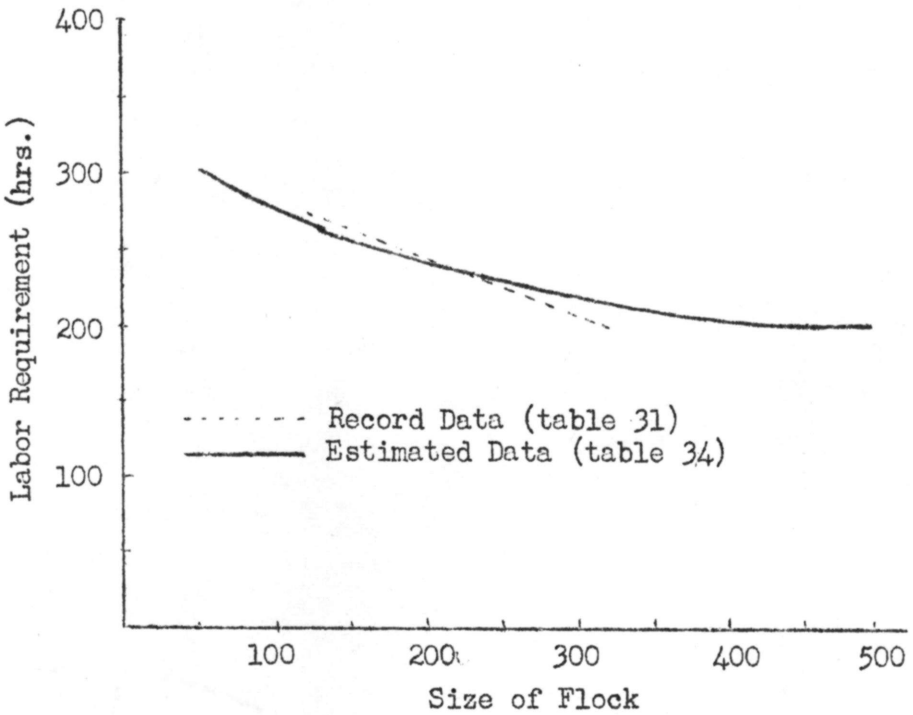

Figure VII. Comparison of record data and estimated data for a farm flock of poultry.

VII. SUMMARY OF ESTIMATED LABOR REQUIREMENTS AND LABOR DISTRIBUTION

For convenience to those using the estimated labor requirements and labor distribution for farm planning, these data for each type of livestock and poultry will be presented again in this section.

As mentioned previously, labor inputs which are obtained from farm records need adjustments before they are useful for farm planning. These adjustments are necessary since (1) inconsistent results are frequently obtained unless a large sample is used and (2) the association between size of enterprise and labor requirement over emphasize the savings which are due to larger scale because of the substitution of equipment for labor on the larger enterprises and because the operators with the larger enterprises are often more highly skilled. Since the estimated requirements are more adapted for use in farm planning, these data rather than the results of the farm records are presented in this section.

The distribution of labor by months will also be summarized in this section. It was not considered necessary to adjust these data, consequently the information summarized on labor distribution are the results obtained from the records kept by the trainees.

Table 35. Estimated Labor Requirements for Selected Livestock Enterprises.

Number of Cows in Herd	Dairy Annual Labor Requirement Per cow [a] When Product is sold as Cream		When Product is sold as Fluid Milk	
	No Milker	With Milker	With Milker Only	With Milker [b] Plus Other Equip.
(no.)	(hrs.)	(hrs.)	(hrs.)	(hrs.)
Less than 5	165	---	---	---
5 to 9	145	125	140	---
10 to 14	135	115	130	105
15 to 19	---	108	124	93
20 to 29	---	104	121	85
30 to 39	---	---	118	80
40 to 50	---	---	---	76

a Includes labor required for replacements.

b For conditions of either a pen-type barn or a stanchion barn with the watering bowls, mechanical barn cleaner, silage unloader, and necessary feed and silage carts.

Table 35 Cont'd.

Beef

Beef Breeding Herd		Beef Fattening	
Number of Cows in Herd	Annual Labor Requirement Per Cow [a]	Number of Cattle Being Fed	Monthly Labor Requirement Per Head
(no.)	(hrs.)	(no.)	(hrs.)
Less than 10	42	Less than 10	6.0
10 to 19	29	10 to 19	4.0
20 to 29	22	20 to 29	3.0
30 to 39	19	30 to 39	2.4
40 to 49	18	40 to 49	2.0
50 to 59	17	50 to 59	1.8
60 to 69	16	60 to 69	1.6
70 to 79	15	70 to 79	1.5
80 to 89	14	80 to 89	1.4
90 to 100	13	90 to 100	1.3

a Includes labor required for replacements and calves.

Sheep

Farm Flock		Lamb Fattening	
Number of Ewes in Flock	Annual Labor Requirement Per Ewe [a]	Number of Lambs Being Fed	Monthly Labor Requirement Per Head
(no.)	(hrs.)	(no.)	(hrs.)
Less than 25	6.0	Less than 100	45
25 to 49	4.5	100 to 199	38
50 to 74	3.5	200 to 299	32
75 to 100	3.0	300 to 399	28
		400 to 599	24
		600 to 1000	20

a Includes labor for replacements and lambs.

Hogs			Poultry	
Number of Litters in Herd	Annual Labor Requirement Per Litter		Number of Hens in Flock	Annual Labor Requirement Per 100 Hens [a]
	No self-feeder nor automatic Watering	Using Self-Feeder and Automatic Watering		
(no.)	(hrs.)	(hrs.)	(no.)	(hrs.)
Less than 5	60	45	Less than 100	300
5 to 9	46	32	100 to 199	240
10 to 14	38	25	200 to 299	225
15 to 19	36	21	300 to 500	200
20 to 30	35	20		

a Includes labor required for replacements.

Table 36. Percentage Distribution of Man Labor Required for Livestock Enterprises, by Months

Months	Milk Cows	Beef, Breeding Herd	Sheep, Farm Flock	Hogs	Poultry
	%	%	%	%	%
January	11	16	13	8	9
February	10	14	12	7	8
March	11	14	15	9	9
April	10	14	13	11	9
May	8	5	6	9	9
June	7	2	3	8	8
July	7	1	2	8	8
August	7	2	4	8	8
September	6	3	4	8	7
October	6	4	7	8	8
November	8	10	9	8	8
December	9	15	12	8	9

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